

REMARKS

The following remarks are fully and completely responsive to the Office Action dated January 31, 2003. Claims 4-6 are pending in this application. In the outstanding Office Action, claims 4-5 were rejected under 35 U.S.C. § 102(b) and claim 6 was rejected under 35 U.S.C. § 103(a). No new matter has been added. Claims 4-6 are presented for reconsideration.

35 U.S.C. § 102(b)

Claims 1-2 were rejected under 35 U.S.C. § 102(b) as being anticipated by Bowcott (U.S. Patent No. 4,149,424). Since claims 1 and 2 were cancelled in the previous Response, it appears that the Office Action intended to reject claims 4-5 under 35 U.S.C. § 102(b). In making this rejection, the Office Action asserts that this reference teaches each and every element of the claimed invention. Applicants disagree and respectfully request reconsideration of this rejection.

Claim 4 recites an electric motor having a case. A rotor assembly resides inside the case. The rotor is supported by the case for both rotary and linear motion. A linearly translating means linearly translates the rotor assembly with respect to the case. Rotating means rotates the rotor assembly with respect to the case. Prevention means prevents rotation of the rotor assembly until the translating means linearly translates the rotor assembly.

Claim 5 recites a method for operating an electric motor. This method includes: restraining the rotation of a rotor assembly when the rotor assembly is in a first position; energizing a translate coil, the energized coil interacting with the rotor assembly to

linearly move the rotor assembly from the first position to a second position where the rotor assembly is free to rotate; and energizing a rotation coil, the energized rotation coil interacting with the rotor assembly to rotate the rotor assembly.

Bowcott teaches a starter motor. This starter motor is formed from a casing 10 within which is mounted a stator 11, a rotor 12, and a rotor shaft 13. A pinion assembly 14 is mounted on the rotor shaft 13.

The pinion assembly 14 is movable axially on the rotor shaft from an inoperative position to an operative position. When the pinion assembly 14 is in the operative position, it engages a toothed starter ring of an internal combustion engine. The pinion assembly 14 is moved axially by solenoid 15 using lever 16.

Solenoid 15 includes a solenoid coil and plunger assembly 17. The plunger assembly has a plunger 18 which is biased by a spring 19. Spring 19 maintains the pinion assembly 14 in the inoperative position until the solenoid 15 is energized.

While spring 19 prevents the linear motion of the pinion assembly 14 on the rotor shaft 13, spring 19 fails to prevent either the rotor 12, rotor shaft 13, or pinion assembly 14 from rotating. Additionally, spring 19 fails to prevent the rotation of rotor 12, rotor shaft 13 or pinion assembly 14 until the pinion assembly 14 is moved to the engaged position.

While Bowcott clearly teaches linearly translating the pinion assembly 14 using solenoid 15 and lever 16, this reference fails to teach and/or suggest any method and/or device which linearly translates rotor 12 and/or rotor shaft 13. Accordingly, Bowcott fails to teach and/or suggest linearly translating the rotor assembly with respect to the case.

Consequently, Bowcott fails to teach and/or suggest the invention recited in claim 4. Specifically, Bowcott fails to teach and/or suggest a means for linearly translating the rotor assembly with respect to the case. This reference also fails to teach and/or suggest means for preventing rotation of the rotor assembly until the translating means linearly translates the rotor assembly. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 4 under 35 U.S.C. § 102(b).

Regarding claim 5, as discussed above, spring 19 fails to restrain the rotation of rotor 12, rotor shaft 13 or pinion assembly 14. Accordingly, this reference fails to teach and/or suggest restraining the rotation of a rotor assembly when the rotor assembly is in a first position.

While energizing solenoid 15 will actuate lever 16 to move the pinion assembly 14 from a non-engaged position to an engaged position, this motion of solenoid 15 and lever 16 fails to move the rotor 12 and rotor shaft 13 from a first position to a second position. Accordingly, Bowcott fails to teach and/or suggest energizing a translate coil, the energized coil interacting with the rotor assembly to linearly move the rotor assembly from the first position to a second position where the rotor assembly is free to rotate.

Consequently, Bowcott fails to teach and/or suggest the invention recited in claim 5. Specifically, Bowcott fails to teach and/or suggest restraining the rotation of a rotor assembly when the rotor assembly is in a first position. This reference also fails to teach and/or suggest energizing a translate coil, the energized coil interacting with the rotor assembly to linearly move the rotor assembly from the first position to a second position where the rotor assembly is free to rotate. Therefore, Applicants respectfully

request reconsideration and withdrawal of the rejection of claim 5 under 35 U.S.C. § 102(b).

35 U.S.C. § 103(a)

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Bowcott (U.S. Patent No. 4,149,424) in view of Shiotsuki (U.S. Patent No. 5,291,084). Since claim 3 was cancelled in the previous Response, it appears that this rejection is directed to claim 6. In making this rejection of claim 6, the Office Action asserts that the combination of these two references teaches and/or suggests each element of the claimed invention. The Office Action also asserts that it would be obvious to one of ordinary skill in the art to combine these two references. Applicants respectfully request reconsideration of this rejection.

Claim 6 recites an electric motor including a case. A rotor assembly resides inside the case. The rotor is supported by the case for linear and rotary motion. A first stator assembly resides inside the case. The stator has unequally spaced poles to induce the rotor to turn in a predetermined direction. A second stator assembly resides inside the case to induce linear motion in the rotor. A restraining device prevents rotation of the rotor assembly until the rotor assembly is linearly moved by the second stator assembly.

The Office Action admits that Bowcott fails to teach and/or suggest a stator having unequally spaced poles to induce the rotor to turn in a predetermined direction. The Office Action cites Shiotsuki as correcting this deficiency in Bowcott. While Shiotsuki may teach the construction of a stepping motor having at least one set of

asymmetric stator pole teeth, this reference is not cited for nor does it correct the deficiencies discussed above regarding claims 4 and 5 in Bowcott.

Consequently, the combination of Bowcott and Shiotsuki fails to teach and/or suggest the claimed invention. Specifically, the combination of these two references fails to teach and/or suggest a restraining device, the restraining device preventing rotation of the rotor assembly until the rotor assembly is linearly moved by the second stator assembly. The combination of these two references also fails to teach and/or suggest a rotor assembly, the rotor assembly residing inside the case, and the rotor supported by the case for linear and rotary motion. These two references also fail to teach and/or suggest a second stator assembly residing inside the case to induce linear motion in the rotor. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 6 under 35 U.S.C. § 103(a).

Conclusion

Applicants' remarks have overcome the rejections set forth in the Office Action dated January 31, 2003. Specifically, Applicants' remarks have distinguished claims 4 and 5 from Bowcott and thus overcome the rejection of these claims under 35 U.S.C. § 102(b). Applicants' remarks have also distinguished claim 6 from the combination of Bowcott and Shiotsuki, and thus overcome the rejection of this claim under 35 U.S.C. § 103(a). Accordingly, claims 4-6 are in condition for allowance. Therefore, Applicants respectfully request consideration and allowance of claims 4-6.

Applicants submit that the application is now in condition for allowance. If the Examiner believes that the application is not in condition for allowance, Applicants

respectfully request that the Examiner contact the undersigned attorney by telephone if it is believed that such contact will expedite the prosecution of the application.

The Commissioner is authorized to charge payment for any additional fees which may be required with respect to this paper to our Deposit Account No. 01-2300, making reference to attorney docket number 023459-00043.

Respectfully submitted,



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Enclosure: Petition for Extension of Time

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